R. W. BURNETT & H. H. VAUGHAN.

SILL FOR RAILWAY CARS.

APPLICATION FILED SEPT. 27, 1912.

1,078,660.

Patented Nov. 18, 1913.

3 SHEETS—SHEET 1.

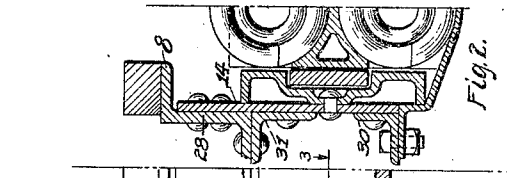


Fig. 2.

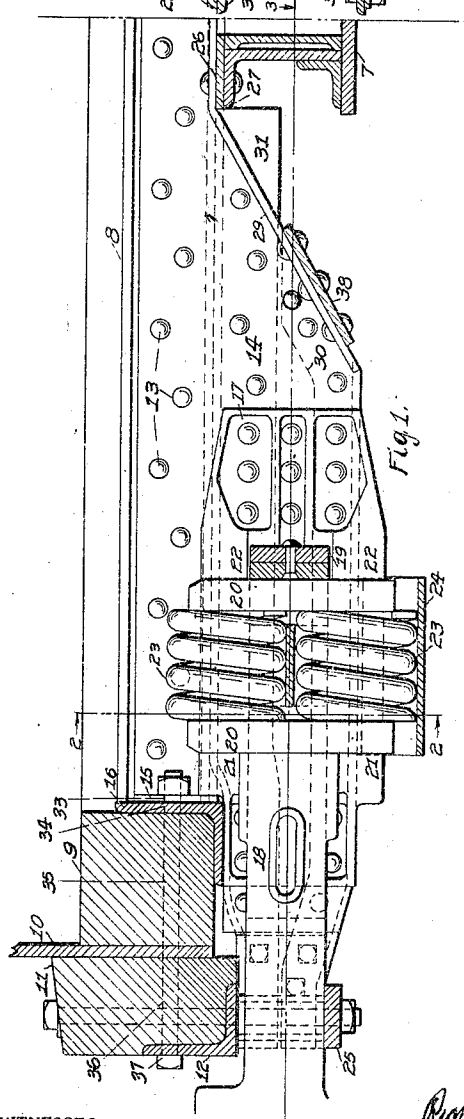


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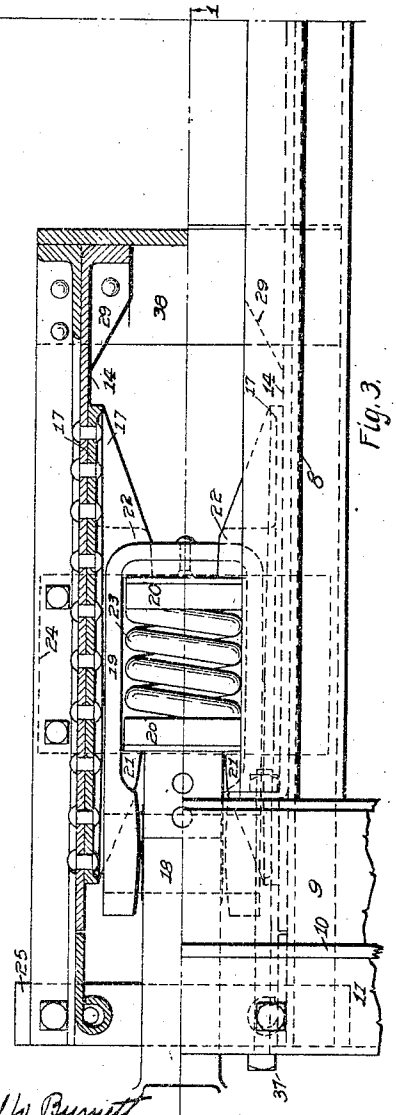


Fig. 3.

WITNESSES

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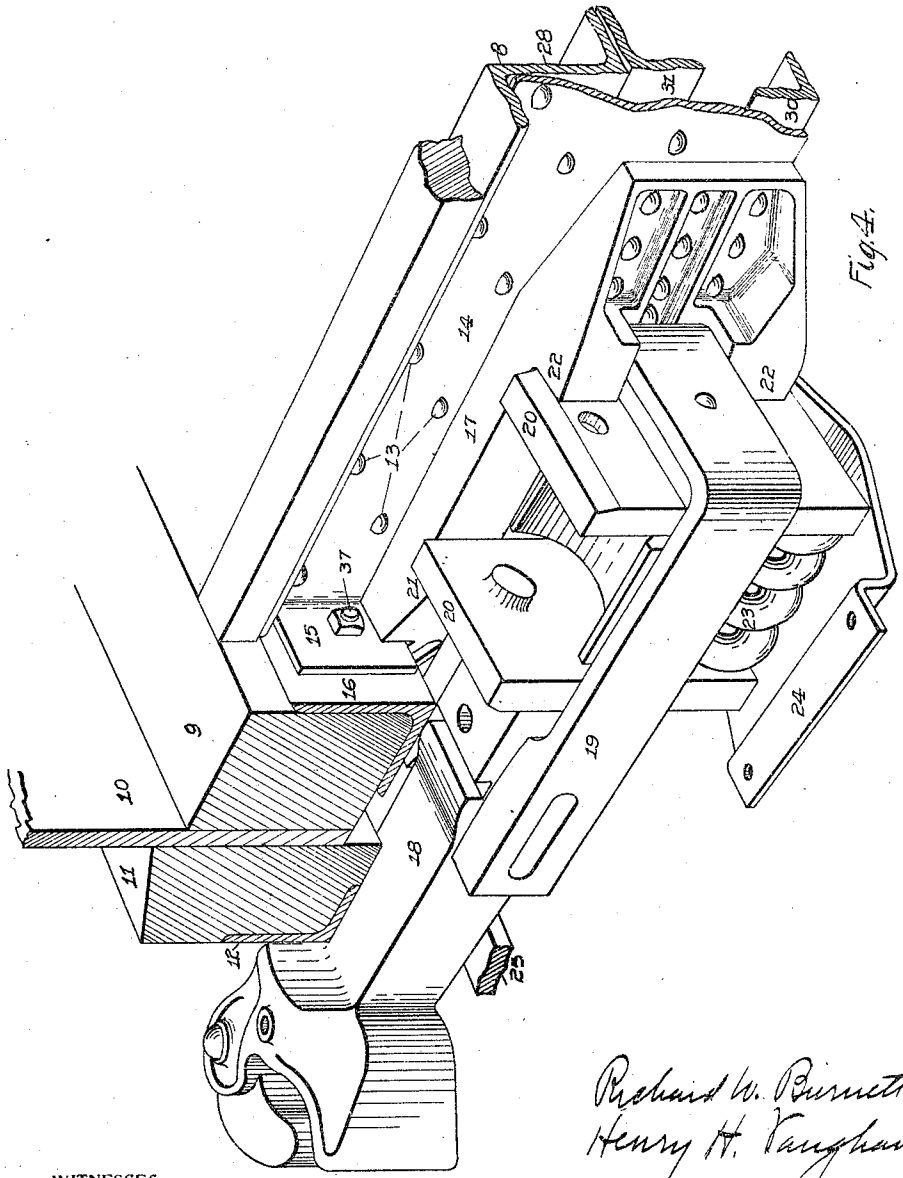



Fig. 4.

WITNESSES

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3 SHEETS-SHEET 3.

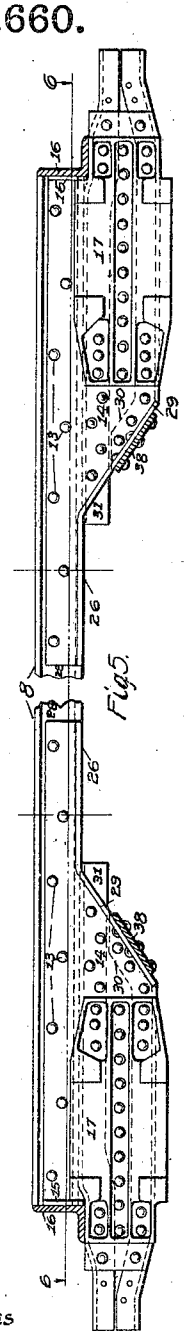


Fig5.

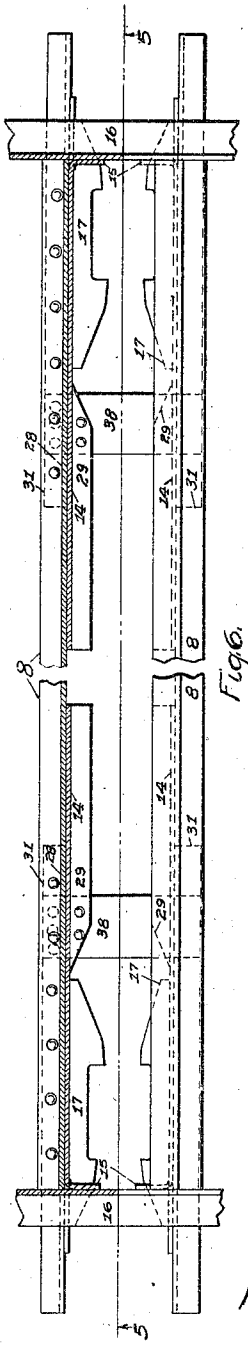


Fig6.

WITNESSES

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# UNITED STATES PATENT OFFICE.

RICHARD W. BURNETT AND HENRY H. VAUGHAN, OF MONTREAL, QUEBEC, CANADA.

## SILL FOR RAILWAY-CARS.

1,078,660. Specification of Letters Patent. Patented Nov. 18, 1913.

Application filed September 27, 1912. Serial No. 722,689.

*To all whom it may concern:*

Be it known that we, RICHARD W. BURNETT and HENRY H. VAUGHAN, citizens of the United States, residing at Montreal, Canada, have invented a certain new and useful Improvement in Sills for Railway-Cars, of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

Our invention relates to sills for railway cars, including those generally known as center-sills and draft-sills.

In the practical operation of railroads, difficulty has heretofore been experienced in changing old center-sills and draft-sills, as for example, wooden sills to sills of metal construction in cars at inconvenient distances from railroad equipment construction and repair shops. Difficulty has also been experienced in preventing injury to car body in cases where, under excessive shocks to the car body, the car body, or parts thereof, has suffered injury on account of a failure to employ the resiliency of the car body to assist in the absorption of said heavy shocks or blows.

The object of our invention is to meet these difficulties by providing a metal construction especially adapted to conveniently replace old wood sills and adapted to employ the resilience of the car body itself in the absorption of excessive shocks and blows transmitted to it through the draft members of the car. We accomplish these objects by providing a unitary metal structure that may, in assembled condition, be shipped to points distant from car shops and conveniently and readily applied, and employed to reconstruct the car body by using the same as a reinforcing backbone. In this structure, the draft-sills are of a peculiar construction and so attached to the center-sills and the body-bolsters of the car as to make the direction of the stress of excessive blows received by the draft members of the car in operation when transmitted to the car body eccentric thereto.

In our construction we employ a pair of center-sills each comprising a Z-bar and extending longitudinally from end to end of the car body and above the body-bolster and secured to the said center-sills in front of the body-bolsters at either end, a pair of draft-sills that extend below the center-sills and are constructed to receive the draft rigging between them, which draft-sills are provided with reinforcing angle irons extending longitudinally thereof and are also provided with an oblique flange extending from the bottom of the draft-sills to the center-sills at the plane of the upper surface of the body bolster, thence rearwardly along the draft sill, the said draft-sills being rearwardly extended back of the body-bolster and secured throughout their length to the center-sills.

In replacing wooden center-sills with our construction, it is necessary only to disengage the old center-sills and bolsters and insert the assembled center-sills and draft-sills and if desirable, new bolsters secured to the same, and suitably secure said structure to the car frame. The use of the Z-bar center-sills passing over the body-bolster enables us to secure a strong construction at the point of union of bolsters and center-sills, and the draft-sills, by being extended rearwardly of the bolster, are by reason thereof capable of distributing shocks along a wide area of the center-sills. The durability and efficiency of the draft-sills in service is insured by the employment of the angle irons, two for each draft-sill, one of which directly abuts the body-bolster.

In our construction, the draft rigging is suspended below the Z-bar center-sills and by reason thereof, buffing or pulling stresses in excess of the resilient capacity of the draft rigging are absorbed by being eccentrically applied to our unitary structure, through the draft sills and oblique flanges thereon. The resiliency of the car body is employed to absorb and ease the heavy shocks of service by applying them eccentrically through this construction and without resulting in damage to the same.

In the drawings, forming a part of this specification, Figure 1 is a side elevation partly in longitudinal section on line 1—1 of Fig. 3 of draft-sills for railway cars embodying our invention. Fig. 2 is a cross-section on line 2—2 of Fig. 1. Fig. 3 is a plan view partly in horizontal section on line 3—3 of Fig. 1. Fig. 4 is a perspective view of a portion of one of our improved draft-sills, showing the draft rigging in place. Fig. 5 is an elevation of the draft and center-sills of a car underframe (broken away in central portion) in vertical longitudinal section on line 5—5 of Fig. 6. Fig. 6 is a plan view of the draft and center-sills

of a car underframe (broken away in the central portion thereof) partly in horizontal longitudinal section on line 6—6 of Fig. 5.

An important feature of our invention is found in the Z-bar form of center sills employed in connection with the draft sills. The planes of the flanges of a Z-bar are substantially parallel to each other, with one flange extending along one side of the connecting web and the other along its other side. In our construction employing a pair of Z-bar center sills the upper flanges of the center sills are turned in one direction, either inwardly or outwardly, but preferably inwardly, and the lower flanges in the other direction preferably outwardly. By reason of this Z-bar form of center sill we are not only enabled to employ the car body's resiliency to absorb and ease heavy shocks, as hereinafter mentioned, through the tendency of the sills to give in a slightly bowing action along their length, but we utilize the lateral resiliency of the Z-bar arising through the distribution of the weight of the remainder of the car body upon this particular type of center sills to ease and absorb heavy shocks. This efficient lateral resiliency cannot be obtained in any other form of center sill, as for instance channel beams in which both flanges are on the same side of the connecting web.

Referring to the drawings, 7—7 represents the body-bolsters of a railway car, 8—8 the center-sills and 9—9 the end-sills of the same. The center-sills are of metal, preferably rolled steel Z-bars, though rolled steel plate-bars pressed into Z-shape may be employed, extending from the end-sill at one end to the end-sill at the other end of the car underframe and above the body-bolsters to which they are suitably secured. The end sheathing 10 of the car is secured at its lower ends between the end-sills and the buffer-block 11, along the length of the same, which buffer block bears the striking-plate 12. Dependent from each center-sill and secured to the inner face thereof by the rivets 13—13 is a draft-sill 14, a pair oppositely faced being provided at either end of the car underframe. Each draft-sill is of greater vertical width than the center-sill to which it is attached and comprises a metal plate of suitable thickness, provided at its forward end with an inwardly turned flange 15 adapted to engage the end-sill angle iron 16. Suitably secured to the inner face of each draft-sill, preferably by rivets, is a stop-member 17, the said stop-members being oppositely arranged near either end of the car underframe. The other parts of the draft rigging are mounted herein and while any suitable kind may be employed, we have shown in the drawings a form having a draw-bar 18, a horizontal yoke 19 keyed thereto, front and rear followers 20, 20 within the yoke, which engage the front and rear stop-shoulders 21 and 22 respectively of the stop-member 17 and springs 23—23 in twin arrangement between the followers. The tie-plate 24 supports the parts within the yoke and the draw-bar carry-iron 25 supports the draw-bar.

In front of the body-bolster the draft-sills are of greater vertical dimensions than the adjoining center-sills and preferably back of the stop-members, each draft-sill along its lower edge is formed obliquely to the longitudinal plane of the center-sills and said oblique portion extending rearwardly as far as the plane of the upper surface 26 of the body-bolster.

From the front edge 27 of the body-bolster, each draft-sill extends rearwardly back of the body-bolster and along this portion of its length is substantially of the same vertical dimension as the web 28 of the adjacent Z-bar center-sill to which it is riveted. Along the aforesaid oblique portion of the lower edge of each draft-sill and extending rearwardly to the end of the same is provided an inwardly-turned flange 29 of strong construction; a reinforcing angle iron 30 extends forwardly from said flange 29 along the lower, outer length of the draft-sill adjacent thereto and is riveted to said draft-sill. Between this angle iron and the adjacent portion of the center-sill and engaging therewith and riveted to the lower flange thereof is provided a further angle iron 31, extending from the forward end of the draft-sill to and abutting the front edge 27 of the body-bolster. Said last-mentioned angle iron is also riveted to the draft-sill. The flange 15 of each draft-sill 14 is provided with the perforations 33 registering with the perforation 34 in the end-sill angle iron and the perforations 35 in the end-sill and 36 in the buffer block to receive the bolt 37. A tie-plate 38 extends transversely of the draft-sill and is riveted at either end to the flanges 29—29 thereof and also to the rear ends of the angle irons 30.

We claim:

1. In a railway car, draft rigging, a car body and means of eccentrically transferring thereto excessive shocks received by the draft rigging, said means comprising Z-bar center-sills and draft-sills secured thereto and extending below the center-sills, the said draft-sills being each provided with a flanged portion arranged obliquely of the center-sills.

2. In a railway car, in combination, Z-bar center sills, draft sills connected thereto and extending below the same, draft rigging mounted between the draft sills, the draft sills being each provided with an oblique flange extended along the lower rear portion

of the same, and upwardly and rearwardly to the center sill.

3. In a railway car, Z-bar center-sills, body-bolsters, draft-sills extended below the center-sills and secured thereto, draft rigging mounted between the draft-sills, and means of transferring excessive shocks received by the draft rigging to the center-sills comprising a flange provided on each draft-sill and rearwardly and upwardly extended to the plane of the upper face of the adjacent body-bolster and thence along the center-sills.

4. In a railway car, Z-bar center-sills, body-bolsters, draft-sills extended below the center-sills and secured thereto, draft rigging mounted between the draft-sills, the said draft-sills each comprising a flat plate provided with an angle iron secured along its length to the adjacent center-sill and the said angle iron abutting at its rear end against the body-bolster, each of said draft-sills having a flange along its lower rear portion obliquely extended upwardly and rearwardly to the adjacent center-sill.

5. In a railway car, Z-bar center-sills, body-bolsters, draft-sills extended below the center-sills and secured thereto, draft rigging mounted between the draft-sills, the said draft-sills each comprising a flat plate provided with an angle iron secured along its length to the adjacent center-sill and abutting at its rear end against the body-bolster and the said draft sills being each also provided with a longitudinal reinforcing angle iron along its lower edge, each of said draft-sills having an oblique flange along its lower rear portion extended upwardly and rearwardly to the adjacent center-sill.

6. In a railway car, draft rigging, a unitary structure comprising a pair of Z-bar center-sills, draft sills secured thereto, each of said draft-sills comprising a flat plate of metal extending below the center-sills and secured to the same, each being provided with an oblique flange extending upwardly and rearwardly to the center-sill and also provided with a pair of reinforcing angle irons, one of said angle irons being secured to the adjacent center-sill and adapted to abut at its rear end against a body-bolster, the other reinforcing angle iron being provided along the lower outer face of said draft-sill, all adapted to be secured in a car body.

7. In a railway car, draft rigging, a car body, and means for eccentrically transferring thereto shocks received by the draft rigging; said means comprising Z-bar center sills and draft sills secured thereto and extending below the center sills.

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Witnesses:
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